



## **BACKGROUND**

The record in this matter is extensive and the briefing has been thorough. Because the first trial of these cases is imminent and the parties are awaiting the Court's ruling, this order will address the issues and the Court's findings in a summary fashion.

Dr. Harriet Ammann is a board-certified toxicologist employed by the State of Washington Department of Ecology Air Quality Program. She has substantial expertise in the nature and effects of poisons, including hydrogen sulfide gas. (Ex. 1, Ammann Curriculum Vitae). Dr. Ammann has studied reports of hydrogen sulfide air concentrations in the region of Dakota City and South Sioux City, Nebraska, for relevant times, issued by the Nebraska Department of Environmental Quality ("NDEQ"), the Agency for Toxic Substances and Disease Registry ("ATSDR"), and individual witnesses' reports based on private monitoring of hydrogen sulfide gas levels. (Abstract of Opinion, Filing No. 317B, Attachment 2A, "First Ammann Report"). She has also studied meteorological and air-modeling data for the region for relevant times. (Supplement to Expert Report, Filing No. 317B, Attachment 2B, "Second Ammann Report"). She interviewed 17 individual Plaintiffs for about 15 minutes each regarding their symptoms, and she has drawn temporal connections between their reports of symptoms and their exposure to hydrogen sulfide emissions. (First Ammann Report p. 35, and Transcript from January 24, 2005, Hearing at 62:3-17, hereafter "Ammann Testimony."). Dr. Ammann also reviewed certain medical records of the Plaintiffs to look for pre-existing conditions and sensitivities. (Second

Ammann Report p. 10; Amman Testimony at 42:7-12).<sup>1</sup> Based on her expertise in the nature and effects of hydrogen sulfide gas, her review of reports showing levels of hydrogen sulfide emissions in the subject area, her interviews of 17 Plaintiffs, and her review of certain medical records, Dr. Ammann offered her opinion that the symptoms reported by the Plaintiffs were “in keeping with” exposure to hydrogen sulfide gas, and that the symptoms were “more likely than not” attributable to such exposure. (First Ammann Report p. 21).

Dr. Ammann is not a medical doctor, has not examined any of the Plaintiffs, and has not conducted any differential diagnosis to rule out any other potential causes of the Plaintiffs’ symptoms. (Filing No. 286, Ex. 1, Deposition of Dr. Ammann, Oct. 22, 2002 (“Ammann Depo.”) 96:2-24; Ammann Testimony at 76:8, 78:10-12). Although in her deposition Dr. Ammann testified that she could not draw a causal link between the Plaintiffs’ exposure to hydrogen sulfide gas and their injuries (Amman Depo. 96:21-24), at the time of the hearing on this matter Dr. Ammann testified that the Plaintiffs’ symptoms and alleged injuries were caused by exposure to hydrogen sulfide gas “by a reasonable degree of scientific certainty.” (Ammann Testimony at 46:3-6). She testified that she understood the term “reasonable degree of scientific certainty” to mean “more probable than not,” although not subject to expression in terms of a potential for error, and that it was a much lower standard than “scientific causation.”<sup>2</sup>

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<sup>1</sup> “[T]here’s a very wide range of susceptibility for hydrogen sulfide. . . . there’s a hundred fold spectrum of sensitivity . . . [t]hat does not take into account things like whether a person has preexisting inflammation of the respiratory tract or has had some previous injury to the nervous system that might predispose them to a toxic insult such as from this very highly toxic gas, hydrogen sulfide.” (Amman Testimony at 35:7-16).

<sup>2</sup> Dr. Ammann testified that according to her understanding of the term “reasonable degree of scientific certainty,” a conclusion was not subject to measurement in terms of a percentage-of-error rate. “I have ways of attributing causality. Measurement implies a numerical thing . . . I can’t tell you 90 percent or 50 percent or 30 percent, but I can attribute causation.” (Ammann Testimony at 79:21-80:1). Conversely, she said “the standard for scientific causation is very high.” She stated that the science of epidemiology uses a statistical measure referred to as the “95<sup>th</sup> confidence interval” meaning that “95 times out of a hundred this is true, and five times it could not be.” (Ammann Testimony at 93:5-20).

## ANALYSIS

This Court must determine whether Dr. Ammann's specialized knowledge will assist the trier of fact to understand evidence or to determine a fact in issue. (Fed. R. Ev. 702). Under Rule 702, the Court must consider whether (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

In determining the reliability of a scientist's methodology, the Court should consider whether a theory or technique can be and has been tested, whether it has been subject to peer review or publication, whether it has known or potential error rates or standards and controls, and whether it has gained general acceptance in the scientific community. *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 593-94 (1993); *Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137, 141 (1999). Dr. Ammann's methodology for her opinion that the Plaintiffs' symptoms and injuries were caused by hydrogen sulfide emissions does not meet these *Daubert* and *Kumho* standards.

The Advisory Committee Notes to the 2000 Amendments to Rule 702, made in response to the *Daubert* decision, list other factors courts often consider when determining whether expert testimony is sufficiently reliable to be considered by the trier of fact. Among these are (1) whether the research was conducted independent of the litigation or the opinions were developed expressly for purposes of the litigation, (2) whether the expert has extrapolated from an accepted practice to an unfounded conclusion, leaving an analytical gap, (3) whether the expert has adequately accounted for alternative explanations, at a minimum ruling out the most obvious alternative causes, (4) whether the expert has employed the same level of care and intellectual rigor in reaching the opinion as the expert would employ when working outside the courtroom in the expert's field of expertise, and (5)

whether the field of expertise claimed by the expert is known to reach reliable results for the type of opinion the expert is offering.

With respect to Dr. Ammann's opinions on causation at issue in this motion, (1) her opinions were developed specifically for purposes of this litigation; (2) there is an analytical gap between her expertise in the nature and effects of hydrogen sulfide gas and her conclusion that the Plaintiffs' symptoms and injuries were caused by exposure to such gas; (3) she has not accounted for any alternative explanations for the Plaintiffs' symptoms and injuries; (4) she testified that the "standard" she employed to reach her conclusion on causation was a far lower standard than that employed in the scientific community to reach a conclusion of causation; and (5) the Court is not persuaded that the field of toxicology is known to reach reliable results on the subject of causation of symptoms or injuries in individuals, absent a reliable statistical analysis of the population subjected to the toxin. Dr. Ammann stated that "in a constellation of symptomology, you can make causal inferences." (Ammann Testimony at 75:8-9). The examples she offered, however, concerned assessments of symptoms throughout a population of individuals who had been exposed to toxins, to determine patterns of complaints. No such statistical survey or assessment of the general population of the Dakota City and South Sioux City region forms any basis for Dr. Ammann's opinion on causation.

The Plaintiffs direct the Court to the "Reference Guide on Toxicology" within the Reference Manual on Scientific Evidence, 2<sup>nd</sup> ed. (2000), published by the Federal Judicial Center. The Reference Manual is an authoritative text useful to judges exercising their *Daubert* gate-keeping function. In its discussion of the admission of expert testimony from toxicologists regarding the specific causal association between an individual's exposure to a toxin and the onset of disease, the Reference Manual states that such an "opinion is

based on an assessment of the individual's exposure, including the amount, the temporal relationship between the exposure and disease, *and other disease-causing factors*. This information is then compared with scientific data on the relationship between exposure and disease. The certainty of the expert's opinion depends on the strength of the research data demonstrating a relationship between exposure and the disease at the dose in question *and the absence of other disease-causing factors (also known as confounding factors)*." *Id.* at 422, emphasis added. "In taking a careful medical history, the expert examines the possibility of competing causes, or confounding factors, for any disease, which leads to a differential diagnosis. . . . The failure of a physician to elicit such a history or of a toxicologist to pay attention to such a history raises questions about competence and leaves open the possibility of competing causes of the disease." *Id.* at 428-29. The value of Dr. Ammann's testimony on individual causation is diminished by the fact that she did not consider any other disease-causing or "confounding" factors. (See, e.g., Ammann Depo. 139:2-13; Ammann Testimony at 78:12).

Finally, to the extent that there is any question regarding whether Dr. Ammann's opinions on causation could satisfy the *Daubert* criteria if she were to rely on reports of the Plaintiffs' expert witnesses who were designated for rebuttal, the Court will not permit her to rely upon such reports to form the basis for her causation opinion. On January 14, 2005, the Court affirmed the decision of Magistrate Judge Gossett denying the Plaintiffs' request to re-designate six rebuttal witnesses as witnesses in the Plaintiffs' cases-in-chief. (Filings No. 313 and 362). For the same reasons stated in those orders, Dr. Ammann will not be permitted to rely upon reports of any such witnesses who were not listed among her references in her initial report (First Ammann Report).

I shall certify for interlocutory appeal this Amended Memorandum and Order in all the consolidated cases except the *Marmo* case (8:00CV527). An order must be certified by the district court before an interlocutory appeal may be taken pursuant to 28 U.S.C. 1292(b). That section states:

(b) When a district judge, in making in a civil action an order not otherwise appealable under this section, shall be of the opinion that such order involves a controlling question of law as to which there is substantial ground for difference of opinion and that an immediate appeal from the order may materially advance the ultimate termination of the litigation, he shall so state in writing in such order. The Court of Appeals which would have jurisdiction of an appeal of such action may thereupon, in its discretion, permit an appeal to be taken from such order, if application is made to it within ten days after the entry of the order: Provided, however, that application for an appeal hereunder shall not stay proceedings in the district court unless the district judge or the Court of Appeals or a judge thereof shall so order.

28 U.S.C. § 1292. “Permission to allow interlocutory appeals should be granted sparingly and with discrimination.” *White v. Nix*, 43 F.3d 374, 376 (8<sup>th</sup> Cir. 1994).

An issue of law is controlling under 28 U.S.C. §1292(b) if its incorrect disposition would require reversal of the final judgment or if its resolution will affect the further course of the litigation. See *Sokaogon Gaming Enterprise Corp. v. Tushie-Montgomery Associates, Inc.*, 86 F.3d 656, 659 (7<sup>th</sup> Cir. 1996)(stating that an issue is controlling “if its resolution is quite likely to affect the further course of the litigation, even if not certain to do so”); *Kapossy v. McGraw-Hill, Inc.*, 942 F.Supp. 996, 1001 (D.N.J. 1996) citing *Katz v. Carte Blanche Corp.*, 496 F.2d 747, 755 (3d Cir.1974)(stating that a “question is ‘controlling’ if its incorrect disposition would require reversal of the final judgment”); *Stout v. Illinois Farmers Ins. Co.*, 882 F.Supp. 776, 778 (S.D.Ind. 1994)(stating whether an issue is controlling “is a threshold issue which seriously affects the way that the court conducts the litigation.”) Under this standard, I conclude that the order in this matter involves a controlling issue of law. If the Eighth Circuit Court were to conclude that Dr. Ammann should be allowed to give

expert opinion testimony regarding the cause of an individual Plaintiff's medical condition, then the final judgments in these consolidated cases would likely be reversed, and the cases would need to be retried to permit the Plaintiffs to present evidence of specific or medical causation from Dr. Ammann.

The other requirements of §1292(b) are also satisfied. The parties' briefs filed in connection with the Statement of Appeal demonstrate that there is substantial ground for difference of opinion on the issue. Some courts have allowed toxicologists to provide specific medical causation opinions, and other courts have not allowed toxicologists to provide specific medical causation opinions. In addition, the restriction on Dr. Ammann's testimony through this order affects not one, but all twelve remaining cases, and the Eighth Circuit Court's resolution of this issue by immediate appeal would materially advance the ultimate termination of the litigation in all twelve remaining cases. The consolidated nature of these cases bears on the desirability of immediate appeal.

If the Eighth Circuit Court agrees to take the appeal, then regardless of its disposition of the appeal, this Court will be in a much better position to progress and try the remaining twelve cases in an efficient manner. For this reason, I conclude that this amended memorandum and order satisfies the statutory requirements for certification pursuant to §1292(b). Accordingly,

IT IS ORDERED:

1. The Defendant's Motion in Limine (Harriet Ammann, Ph.D.) (8:00CV529, Filing No. 263; 8:00CV530, Filing No. 264; 8:00CV531, Filing No. 266; 8:00CV532, Filing No. 265; 8:00CV533, Filing No. 272; 8:00CV534, Filing No. 270; 8:00CV535, Filing No. 268; 8:00CV536, Filing No. 263; 8:00CV537,



Filing No. 266; 8:01CV27, Filing No. 270; 8:01CV28, Filing No. 255; and 8:02CV293, Filing No.187) is granted in part and denied in part as follows:

- (A) Dr. Ammann may testify regarding the nature and effects of hydrogen sulfide gas and may offer her opinion that certain symptoms and injuries allegedly suffered by the Plaintiffs are “consistent with” or “in keeping with” exposure to such gas at certain levels and for certain intervals of time;
  - (B) Dr. Ammann may not offer an opinion that any of the Plaintiffs’ symptoms or injuries were caused by exposure to hydrogen sulfide gas, to any degree of probability or certainty; and
  - (C) Dr. Ammann may not offer an opinion based on statements or records of the Plaintiffs’ rebuttal witnesses who were not listed among her references in her initial report of expert opinion; and
2. Because this Court is of the opinion that this Amended Memorandum and Order involves a controlling question of law as to which there is substantial ground for difference of opinion and that an immediate appeal from the amended memorandum and order may materially advance the ultimate termination of the litigation, the Plaintiffs may take an appeal from this Amended Memorandum and Order.

DATED this 4<sup>th</sup> day of May, 2005.

BY THE COURT:

s/Laurie Smith Camp  
Laurie Smith Camp  
United States District Judge